

Appl. No.: 09/730,188
Amdt. Dated: August 1, 2006
Reply to Office action of: May 31, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-5 (Canceled)

1 **Claim 6 (Currently amended):** A waveform equalizer comprising:
2 an equalizing filter unit including a delay circuit with a
3 tap;
4 a discriminator which decodes an output signal of said
5 equalizing filter unit;
6 tap arrangement control means which controls a tap
7 arrangement of said equalizing filter unit; and
8 tap coefficient monitoring unit which monitors a tap
9 coefficient of said equalizing filter unit, and changes the tap
10 arrangement of said equalizing filter unit so as to restart a
11 starting step of the equalizing filter unit for equalizing a
12 reception signal, depending upon a change state of the tap
13 coefficient used while the reception signal is equalized;
14 wherein said tap arrangement control means further
15 comprising an impulse response predicting device for predicting
16 an impulse response of a transfer path; and
17 wherein said tap arrangement control means changes the tap
18 arrangement of said equalizing filter unit in such a manner that
19 said tap arrangement becomes suitable for the next impulse having

20 a large pulse component in response to an impulse response
21 predicted by both the equalized output of said discriminator and
22 a reference condition of the reception signal.

1 **Claim 7 (Previously presented):** A waveform equalizer comprising:
2 an equalizing filter unit including a delay circuit with a
3 tap;
4 a discriminator which decodes an output signal of said
5 equalizing filter unit;
6 tap arrangement control means which controls a tap
7 arrangement of said equalizing filter unit; and
8 tap coefficient monitoring unit which monitors a tap
9 coefficient of said equalizing filter unit, and changes the tap
10 arrangement of said equalizing filter unit so as to restart a
11 starting step of the equalizing filter unit for equalizing a
12 reception signal, depending upon a change state of the tap
13 coefficient used while the reception signal is equalized;
14 wherein said tap arrangement control means comprising an
15 impulse response predicting device for predicting an impulse
16 response of a transfer path; and
17 wherein said tap arrangement control means changes the tap
18 arrangement of said equalizing filter unit in such a manner that
19 said tap arrangement becomes optimum with respect to an impulse
20 response predicted by both the equalized output of said
21 discriminator and a condition of the reception signal.

Claims 8-10 (Canceled)

1 **Claim 11 (Previously presented):** A mobile station wireless
2 apparatus equipped with a waveform equalizer capable of removing
3 an adverse influence caused by frequency selective fading, said
4 waveform equalizer comprising:

5 an equalizing filter unit including a delay circuit with a
6 tap;

7 a discriminator which decodes an output signal of said
8 equalizing filter unit;

9 tap arrangement control means which controls a tap
10 arrangement of said equalizing filter unit;

11 a tap coefficient monitoring unit which monitors a tap
12 coefficient of said equalizing filter unit; and

13 detector means which detects a moving speed of the mobile
14 station wireless apparatus,

15 wherein when the moving speed is higher than a preselected
16 threshold value, the tap arrangement of said equalizing filter
17 unit is changed so as to restart a starting step of the
18 equalizing filter unit for equalizing a reception signal,
19 depending upon a change state of the tap coefficient used while
20 the reception signal is equalized.

1 **Claim 12 (Previously presented):** A mobile station wireless
2 apparatus equipped with a waveform equalizer capable of removing
3 an adverse influence caused by frequency selective fading, said
4 waveform equalizer comprising:
5 an equalizing filter unit including a delay circuit with a
6 tap;
7 a discriminator which decodes an output. signal of said
8 equalizing filter unit;
9 tap arrangement control means which controls a tap
10 arrangement of said equalizing filter unit;
11 a tap coefficient monitoring unit which monitors a tap
12 coefficient of said equalizing filter unit; and
13 detector means which detects a moving speed of the mobile
14 station wireless apparatus,
15 wherein when the moving speed is higher than a preselected
16 threshold value, the tap arrangement of said equalizing filter
17 unit is changed so as to restart reception signal equalizing
18 steps from a preselected step prior to the present step thereof
19 while said reception signal is equalized, depending upon a change
20 state of the tap coefficient during the equalization of said
21 reception signal.

1 **Claim 13 (Previously presented):** A mobile station wireless
2 apparatus equipped with a waveform equalizer capable of removing

3 an adverse influence caused by frequency selective fading, said
4 waveform equalizer comprising:
5 an equalizing filter unit including a delay circuit with a
6 tap;
7 a discriminator which decodes an output signal of said
8 equalizing filter unit;
9 tap arrangement control means which controls a tap
10 arrangement of said equalizing filter unit;
11 a tap coefficient monitoring unit which monitors a tap
12 coefficient of said equalizing filter unit; and
13 detector means which detects a moving speed of the mobile
14 station wireless apparatus,
15 wherein when the moving speed is higher than a preselected
16 threshold value, an operation is performed in which the tap
17 arrangement of said equalizing filter unit is changed so as to
18 restart reception signal equalizing steps from a preselected step
19 prior to the present step thereof while said reception signal is
20 equalized, depending upon a change state of the tap coefficient
21 during the equalization of said reception signal; and further so
22 as to repeatedly perform said operation, depending upon a change
23 condition of the tap coefficient while restarting the
24 equalization of said reception signal.

Claims 14-19 (Canceled)

1 **Claim 20 (Previously presented):** A mobile communication system
2 having a base station and a mobile station, in which said mobile
3 station is equipped with a waveform equalizer capable of removing
4 an adverse influence caused by frequency selective fading, said
5 waveform equalizer comprising:
6 an equalizing filter unit including a delay circuit with a
7 tap;
8 a discriminator which decodes an output signal of said
9 equalizing filter unit;
10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit;
12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit; and
14 detector means which detects a moving speed of the mobile
15 station wireless apparatus,
16 wherein when the moving speed is higher than a preselected
17 threshold value, the tap arrangement of said equalizing filter
18 unit is changed so as to restart a starting step of the
19 equalizing filter unit for equalizing a reception signal,
20 depending upon a change state of the tap coefficient used while
21 the reception signal is equalized.

1 **Claim 21 (Original):** A mobile communication system having a base
2 station and a mobile station, in which said mobile station is

3 equipped with a waveform equalizer capable of removing an adverse
4 influence caused by frequency selective fading, said waveform
5 equalizer comprising:

6 an equalizing filter unit including a delay circuit with a
7 tap;

8 a discriminator which decodes an output signal of said
9 equalizing filter unit;

10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit;

12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit; and

14 detector means which detects a moving speed of the mobile
15 station wireless apparatus,

16 wherein when the moving speed is higher than a preselected
17 threshold value, the tap arrangement of said equalizing filter
18 unit is changed so as to restart reception signal equalizing
19 steps from a preselected step prior to the present step thereof
20 while said reception signal is equalized, depending upon a change
21 state of the tap coefficient during the equalization of said
22 reception signal.

1 **Claim 22 (Previously presented):** A mobile communication system
2 having a base station and a mobile station, in which said mobile
3 station is equipped with a waveform equalizer capable of removing
4 an adverse influence caused by frequency selective fading, said

5 waveform equalizer comprising:
6 an equalizing filter unit including a delay circuit with a
7 tap;
8 a discriminator which decodes an output signal of said
9 equalizing filter unit;
10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit;
12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit; and
14 detector means which detects a moving speed of the mobile
15 station wireless apparatus,
16 wherein when the moving speed is higher than a preselected
17 threshold value, an operation is performed in which the tap
18 arrangement of said equalizing filter unit is changed so as to
19 restart reception signal equalizing steps from a preselected step
20 prior to the present step thereof while said reception signal is
21 equalized, depending upon a change state of the tap coefficient
22 during the equalization of said reception signal; and further so
23 as to repeatedly perform said operation, depending upon a change
24 condition of the tap coefficient while restarting the
25 equalization of said reception signal.

1 **Claim 23 (Currently amended):** A waveform equalizer equipped
2 comprising:
3 an equalizing filter unit including a delay circuit with a

4 tap;

5 a discriminator which decodes an output signal of said
6 equalizing filter unit;

7 tap arrangement control means which controls a tap
8 arrangement of said equalizing filter unit; and

9 a tap coefficient monitoring unit which monitors a tap
10 coefficient of said equalizing filter unit, and changes the tap
11 arrangement of said equalizing filter unit so as to restart
12 reception signal equalizing steps from a preselected step prior
13 to the present step thereof while said reception signal is
14 equalized, depending upon a change state of the tap coefficient
15 during the equalization of said reception signal;

16 wherein said tap arrangement control means further
17 comprising an impulse response predicting device for predicting
18 an impulse response of a transfer path; and

19 wherein said tap arrangement control means changes the tap
20 arrangement of said equalizing filter unit in such a manner that
21 said tap arrangement becomes suitable for the next impulse having
22 a large pulse component in response to an impulse response
23 predicted by both the equalized output of said discriminator and
24 a ~~reference~~ condition of the reception signal.

1 **Claim 24 (Currently amended):** A waveform equalizer equipped

2 comprising:

3 an equalizing filter unit including a delay circuit with a
4 tap;

5 a discriminator which decodes an output signal of said
6 equalizing filter unit;

7 tap arrangement control means which controls a tap
8 arrangement of said equalizing filter unit;

9 a tap coefficient monitoring unit which performs an
10 operation of monitoring a tap coefficient of said equalizing
11 filter unit and changing the tap arrangement of said equalizing
12 filter unit so as to restart reception signal equalizing steps
13 from a preselected step prior to the present step thereof while
14 said reception signal is equalized, depending upon a change state
15 of the tap coefficient during the equalization of said reception
16 signal, and further so as to repeatedly perform said operation,
17 depending upon a change condition of the tap coefficient while
18 restarting the equalization of said reception signal;

19 wherein said tap arrangement control means further
20 comprising an impulse response predicting device for predicting
21 an impulse response of a transfer path; and

22 wherein said tap arrangement control means changes the tap
23 arrangement of said equalizing filter unit in such a manner that
24 said tap arrangement becomes suitable for the next impulse having
25 a large pulse component in response to an impulse response
26 predicted by both the equalized output of said discriminator and

27 a ~~reference~~condition of the reception signal.

1 **Claim 25 (Previously presented):** A waveform equalizer equipped
2 comprising:
3 an equalizing filter unit including a delay circuit with a
4 tap;
5 a discriminator which decodes an output signal of said
6 equalizing filter unit;
7 tap arrangement control means which controls a tap
8 arrangement of said equalizing filter unit; and
9 a tap coefficient monitoring unit which monitors a tap
10 coefficient of said equalizing filter unit, and changes the tap
11 arrangement of said equalizing filter unit so as to restart
12 reception signal equalizing steps from a preselected step prior
13 to the present step thereof while said reception signal is
14 equalized, depending upon a change state of the tap coefficient
15 during the equalization of said reception signal;
16 wherein said tap arrangement control means comprising an
17 impulse response predicting device for predicting an impulse
18 response of a transfer path; and
19 wherein said tap arrangement control means changes the tap
20 arrangement of said equalizing filter unit in such a manner that
21 said tap arrangement becomes optimum with respect to an impulse
22 response predicted by both the equalized output of said
23 discriminator and a condition of the reception signal.

1 **Claim 26 (Previously presented):** A waveform equalizer equipped
2 comprising:

3 an equalizing filter unit including a delay circuit with a
4 tap;

5 a discriminator which decodes an output signal of said
6 equalizing filter unit;

7 tap arrangement control means which controls a tap
8 arrangement of said equalizing filter unit;

9 a tap coefficient monitoring unit which performs an
10 operation of monitoring a tap coefficient of said equalizing
11 filter unit and changing the tap arrangement of said equalizing
12 filter unit so as to restart reception signal equalizing steps
13 from a preselected step prior to the present step thereof while
14 said reception signal is equalized, depending upon a change state
15 of the tap coefficient during the equalization of said reception
16 signal, and further so as to repeatedly perform said operation,
17 depending upon a change condition of the tap coefficient while
18 restarting the equalization of said reception signal;

19 wherein said tap arrangement control means comprising an
20 impulse response predicting device for predicting an impulse
21 response of a transfer path; and

22 wherein said tap arrangement control means changes the tap
23 arrangement of said equalizing filter unit in such a manner that
24 said tap arrangement becomes optimum with respect to an impulse

Appl. No.: 09/730,188
Amdt. Dated: August 1, 2006
Reply to Office action of: May 31, 2006

25 response predicted by both the equalized output of said
26 discriminator and a condition of the reception signal.